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Indian Standard

SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(Second Revision)

First Reprint APRIL 1989

UDC 631.363.22.022—871

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BUREAU OF INDIAN STANDARDS
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Gr 2 ***June*** **1979**

Indian Standard

SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(*Second Revision*)

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(*Continued on page* 2)

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Indian Standard

SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 19 January 1979, after the draft finalized by the Agricultural Produce Processing Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Blades are used in chaff cutters for performing the job of cutting the chaff. Being a fast wearing component, it has to be replaced very often. The blades manufactured in the country differ considerably in material and in connecting dimensions.

0.3 In order to ensure the interchangeability, this standard was first published in 1959 and revised in 1968. Since then considerable progress had taken place in the manufacture of blades. It was, therefore, felt to revise this standard to incorporate certain modifications found necessary.

0.4 This standard covers the requirements of blades for manually-operated (light duty) chaff cutters and is complementary to IS : 7898-1975*. The requirements of blades for animal-operated (medium duty) and power-operated (heavy duty) chaff cutters would be covered in separate Indian Standards.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies material, dimensions and other requirements of blades for manually-operated chaff cutters.

---

*Specification for manually-operated chaff cutter.

†Rules for rounding off numerical values (*revised*).

2. MATERIAL

2.1 Carbon steel or alloy steel having following chemical compositions shall be used in the manufacture of blades:

Elements	*Carbon Steel*	*Alloy Steel*
a) Carbon	0·60 to 0·90 percent	0·35 to 0·45 percent
b) Silicon	0·10 to 0·35 percent	0·10 to 0·35 percent
c) Manganese	0·50 to 0·80 percent	0·60 to 0·90 percent
d) Sulphur	0·05 percent, *Max*	0·05 percent, *Max*
e) Phosphorus	0·05 percent, *Max*	0·05 percent, *Max*
f) Chromium	—	0·90 to 1·20 percent

2.1.1 Some of the typical steels that may be used are T65, T70Mn65, T75, T80Mn65, T85 and 40Cr1 (*see* IS : 1570-1961*).

2.1.2 The requirements regarding materials prescribed under **2.1** and **2.1.1** are only the minimum. Use of other materials having characteristics better than those specified is not precluded.

3. HARDNESS

3.1 The blades shall be heat-treated to have a hardness within a range of 35 to 50 *HRC* (*see* IS : 1586-1968†) up to two-thirds portion from the tip of the bevelled edge.

3.2 The hardness value shall not differ from the maximum hardness found in the same blade by more than 10 percent.

4. SHAPE

4.1 A typical shape of the blade is given in Fig. 1.

5. DIMENSIONS

5.1 The essential dimensions of blade when read in conjunction with Fig. 1 shall be as given in Table 1

5.2 The thickness of steel sheet shall be between 2·0 to 2·5 mm. The tolerance on the declared thickness shall be ± 10 percent.

5.3 The length of the blade (*see* X in Fig. 1) shall be declared by the manufacturer. The width of the blade (*see* Y in Fig. 1) shall be between 100 to 150 mm. The tolerance on declared width and length shall be ± 1 mm.

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*Schedules for wrought steels for general engineering purposes.

†Method for rockwell hardness test (B and C scales) for steels (*first revision*).

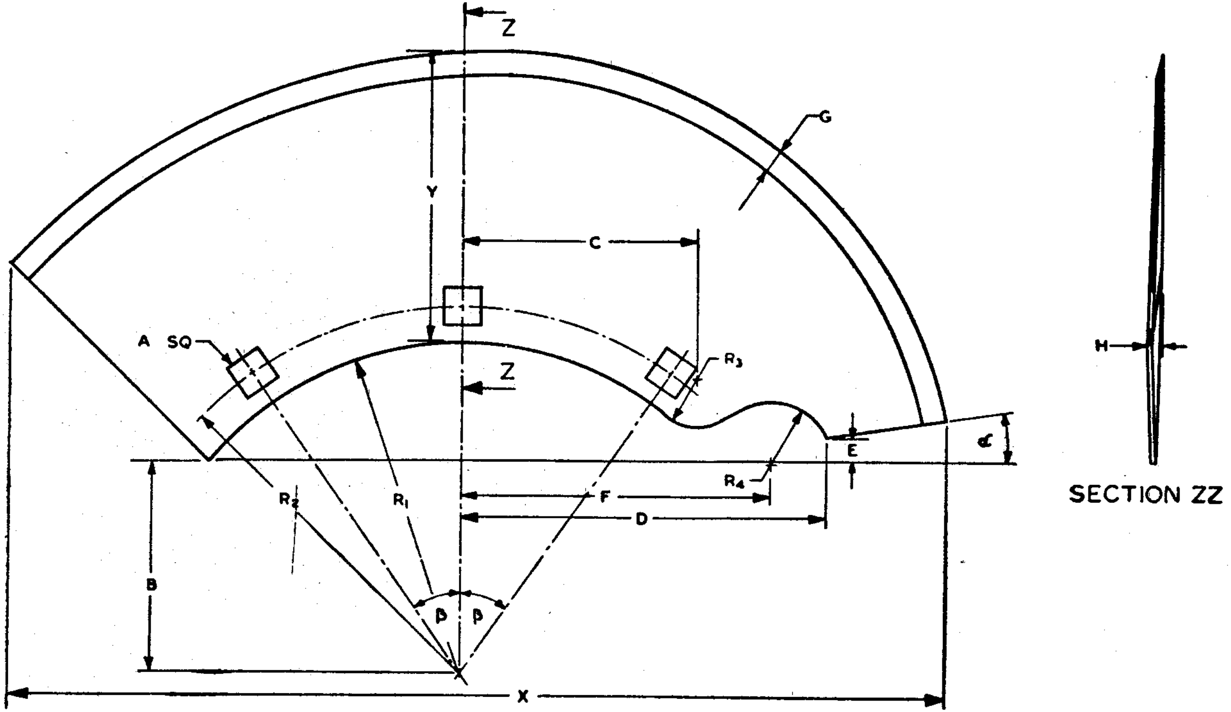

Fig. 1 A Typical Shape of the Blade

TABLE 1 DIMENSIONS OF BLADE

(*Clause* 5.1)

SL No.	A	B	C	D	E	F	R_1	R_2	R_3	R_4	α	β
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	$^{+1}_{-0}$	± 3	± 5	± 3		± 3	± 1	± 1	± 1	± 1	± 2	± 2
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	degrees
i)	12	85	85	135	5 to 10	115	125	140	15	20	8	34
ii)	12	90	100	155	5 to 10	130	140	155	20	25	8	34
iii)	12	100	100	160	5 to 10	135	150	165	20	25	8	37

6. OTHER REQUIREMENTS

6.1 The holes shall be square and smooth. The corners of the square holes should be rounded. The holes should be provided with 10 mm size square carriage bolts.

6.2 The cutting edge of the blade shall be sharp and shall be bevelled on one side. The minimum length of bevelling (*see* G in Fig. 1) shall be 10 mm. The bevelling may have single angle or double (stepped) angle. The recommended bevel angle for single bevelling is 12° and for double bevelling 45°/12°.

6.3 The blade shall be slightly curved towards the back. When it is laid on a flat surface, the curvature shall be such that the height of the back of the blade from the flat surface (*see* H in Fig. 1) shall be 3 to 9 mm.

7. WORKMANSHIP AND FINISH

7.1 The blade shall be ground on its non-bevelled side.

7.2 The blade shall be free from flaws, seams, scratches, cracks, pits and other defects. All fins, burrs and sharp edges, other than the cutting edge, shall be removed. The cutting edge shall be sharpened ready for use.

7.3 The finished blade shall be given a coat of any suitable mineral jelly or any other corrosion preventives (*see* IS : 1153-1975*).

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*Specification for temporary corrosion preventives, fluid, hard film, solvent deposited (*first revision*).

8. MARKING AND PACKING

8.1 Marking — Each blade shall be marked with the following particulars:

a) Manufacturer's name and/or recognized trade-mark,
b) Size code,
c) Thickness, and
d) Batch or code number.

8.1.1 Each blade may also be marked with the ISI Certification Mark.

Note — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8.2 Packing — The blades of the same size and thickness shall be packed in bundles of two or multiples of two, as agreed to between the purchaser and the supplier for safe handling in transit and storage.

9. SAMPLING FOR LOT ACCEPTANCE

9.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the blade for lot acceptance shall be done in accordance with **3** of IS : 7201-1974*.

9.1.1 The classification of different requirements of this specification for the purpose of testing for lot acceptance is given below for guidance:

a) *Dimensional and Visual Requirements — See* **4**, **5**, **6**, **7** and **8.1**.
b) *Other than Dimensional and Visual Requirements — See* **3**.

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*Method of sampling of agricultural machinery and tractors.

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Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 NOVEMBER 1980

TO

IS:1511-1979 SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(Second Revision)

Alteration

(*Page 4, clause 5.2*) - Substitute the following for the existing clause:

'5.2 The nominal thickness of the steel sheet shall be 2.00, 2.24 or 2.50 mm. The tolerance on the declared thickness shall be ± 10 percent.'

(AFDC 42)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 AUGUST 1986

TO

IS:1511-1979 SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(Second Revision)

(*Page 4, clauses 2.1, 2.1.1 and 2.1.2*) – Substitute the following for the existing clauses:

'2.1 – The chemical composition of the steels to be used for the manufacture of blades shall be as follows:

a) *Carbon Steel*

Carbon	0.60 to 0.90 percent
Silicon	0.10 to 0.40 percent
Manganese	0.50 to 1.0 percent
Sulphur	0.05 percent, *Max*
Phosphorus	0.05 percent, *Max*

b) *Alloy Steel*

Carbon	0.70 to 0.90 percent
Silicon	0.10 to 0.40 percent
Manganese	0.50 to 0.80 percent
Sulphur	0.05 percent, *Max*
Phosphorus	0.05 percent, *Max*
Aluminium	0.1 percent, *Max*
Chromium	0.1 to 0.2 percent.'

2.1.1 Some of the typical steels that may be used are T 65, T 70 Mn 65, T 75, T 60 Mn 65, T 85 and 40 Cr1 (*see* IS:1570-1961*).

(*Page 4, clauses 3.1 and 3.2*) – Substitute the following for the existing clauses:

'3.1 The blade shall be either fully or partially hardened.

3.1.1 The fully hardened blade shall be properly and uniformly heat treated to have a hardness of 40 to 45 HRC (*see* IS:1586-1968[+]).

3.1.2 The partially hardened blades shall be properly heat treated to have a hardness of 40 to 45 HRC (*see* IS:1586-1968[+]) upto two-thirds portion of the blade from the tip of the bevelled edge.'

(AFDC 42)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 DECEMBER 1995
TO
IS 1511 : 1979 SPECIFICATION FOR BLADES FOR MANUALLY-OPERATED CHAFF CUTTER

(Second Revision)

[*Page* 4, *clauses* **3.1.1** *and* **3.1.2** (*see also Amendment No.* 2)] — Substitute 'IS 1586 : 1988' *for* 'IS 1586 : 1968' and in the corresponding foot-note substitute '*second revision*' *for* '*first revision*'

(*Page* 7, *clause* **9.1**, *last line*) — Substitute 'IS 7201 (Part 1) : 1987' *for* 'IS 7201 : 1974' and corresponding title in the foot-note as '*Methods of sampling for agricultural machinery and equipment : Part 1 Hand tools and hand operated/animal drawn equipment (*first revision*).'

(FAD 51)

Reprography Unit, BIS, New Delhi, India